

SUBMISSION INSTRUCTIONS NO. 20
COMPONENTS OF THE PROFESSIONAL ENGINEER'S CERTIFICATION AND
EVALUATION REQUIRED BY 10.1-1410.2 B OF THE CODE OF VIRGINIA

Developed by

Virginia Department of Environmental Quality
Office of Waste Programs
629 East Main Street
Richmond, Virginia 23219

V. 06/21/2006

1.0 APPLICABILITY OF INSTRUCTIONS

These instructions are applicable to solid waste facilities which are requesting either a termination or reduction from post-closure care (PCC) requirements as allowed by the Virginia Solid Waste Management Regulations (VSWMR), promulgated by the Virginia Waste Management Board, effective December 18, 1988, as amended.

2.0 INTENT OF INSTRUCTIONS

Section 10.1-1410.2 B. of the Code of Virginia requires the facility owner or operator to submit a certification at least 180 days prior to the completion of the PCC monitoring and maintenance period. The certification must be signed by a professional engineer (P.E.) licensed in the Commonwealth and must state that PCC monitoring and maintenance have been completed in accordance with the PCC plan. The certification shall be accompanied by an evaluation, prepared by the P.E. and signed by the owner or operator, assessing and evaluating the landfill's potential harm to human health and the environment in the event that PCC monitoring and maintenance are discontinued.

This evaluation must:

- be signed by the owner or operator;
- be prepared by an P.E. licensed in the Commonwealth; and
- assess the landfill's potential harm to human health and the environment.

The certification and evaluation required by the Code are addressed in the VSWMR [9 VAC 20-80-250.F.6, 260.F.5, 270.F.5]. A submission providing the information outlined in this submission instruction will contain the basic information the DEQ will use to evaluate the PCC period. Based on the evaluation of the submitted data, the Director will determine if the PCC period will be extended or the owner will be fully or partially released from PCC requirements as allowed in the VSWMR [9 VAC 20-80-250.F.3.a, 260.F.2.a, 270.F.2.a] of the Code.

Acknowledgement from the department

Upon receiving the certification and the evaluation, DEQ will acknowledge receipt of the package. DEQ will review the post-closure certification and evaluation within 180 days of receipt of the post-closure certification and evaluation.

The content of the Termination of PCC Activity (TPCA) Evaluation will depend on which PCC monitoring or activities have been proposed for termination. If an owner or operator requests to discontinue some, but not all of the PCC monitoring or activities, the TPCA must address the potential harm to human health and the environment presented by the activities proposed to be discontinued. In addition, the evaluation must summarize the status of the PCC responsibilities and monitoring that will continue. For example, requests to discontinue gas monitoring do not need to include detailed information on groundwater monitoring; however, the status of the groundwater monitoring program should be mentioned in the evaluation.

These instructions have been developed to assist the Owner or Operator with completing a TPCA Evaluation and Certification that meets the requirements of the Code of Virginia with appropriate technical content to make the required demonstrations. These instructions have been developed as guidance, not a rule. They have not gone through public comment. They may be altered to fit facility-specific conditions where needed. These submission instructions are an outline of the minimum technical content that should be addressed within the TPCA Evaluation.

3.0 EVALUATION REPORT FORMAT

An evaluation for termination, or a summary of status should be provided for each of the following applicable PCC monitoring and maintenance topics for which PCC termination is being requested.

1. Groundwater Monitoring
2. Surface Water Monitoring
3. Gas Monitoring
4. Leachate Management
5. Stormwater Management
6. Final Cover System Maintenance
7. Maintenance of monitoring systems and other appurtenances

The report should contain an introductory section detailing a description of the facility and its history of use. Further detail regarding the evaluations to be provided for the activities listed above are provided in this section.

If approval is granted to reduce PCC monitoring or maintenance activities, but some post closure activities will continue, a revised PCC plan will be required to reflect changes made to the PCC activities and/or monitoring requirements. A minor permit amendment will be required to update the PCC plan. In addition, other modules of the permit may require amendment to reflect the current requirements for PCC monitoring. Until the amendment is approved, the facility must comply with the terms of the existing permit.

If DEQ decides to grant approval for all PCC monitoring and maintenance activities to be discontinued or partial release from PCC activities, the DEQ will issue a letter acknowledging submittal of a technically complete application and requesting the Permittee/Owner to conduct a public meeting. The Permittee/Owner will advertise and conduct a public meeting to notify the community of the intent to discontinue PCC. Based on comments received from this meeting the Director will issue a letter granting the facility a release from post-closure care requirements or extend the post-closure care period. Financial assurance and annual fees will no longer apply to facilities having been released from post closure care activities.

The evaluation prepared according to these submission instructions is intended to be a stand alone technical document. However, the DEQ recognizes that some of the technical information within these instructions may have been submitted under separate cover as part of Permit applications or previous major or minor amendments, annual reports, and corrective action reports, a summary of such technical information shall be included in the demonstration.

The P.E.'s evaluation of the landfill's potential to harm human health and the environment must include the following components:

A. Cover Page – Provide the following information:

1. Landfill Name
2. Landfill location (County)
3. DEQ Permit #
4. Name and contact information for Permittee, Owner or Operator
5. Name and contact information for Engineer performing evaluation
6. Date report submitted

B. Table of Contents – Specify the order and organization of the report sections. A recommended format is provided in Table 1 of these instructions.

C. Evaluation Summary – Provide a brief summary of the evaluation and the basis for the request for release or reduction in PCC activities or monitoring. Indicate the activities that are proposed to be discontinued and the activities that will continue. If all permitted activities are proposed for termination, state so in this section. Discuss any proposed future use of the site.

D. Introduction - Include the purpose of the report, discuss any applicable report limitations, and define terminology used in the evaluation.

E. Facility History and Site Description – A facility may consist of several treatment, storage or disposal units, including unlined disposal areas. Provide the following information:

1. A description of the types and quantities of wastes disposed at the facility
2. The date of operation of the facility (dates facility began receiving waste and ceased accepting waste). The facility should support these dates with applicable documentation.
3. The date the facility was certified as having been closed by a P.E. (also indicate if the DEQ acknowledged the facility had been properly closed)
4. Disposal method used, trench fill, valley fill, area fill, cell fill etc.
5. A description of any groundwater corrective action or gas remediation performed at the facility as applicable.
6. Information on any other permits issued by EPA, DEQ, or other state agencies for this facility
7. Discuss any change in adjacent land use over time. The site may have been developed in a rural area that may have changed to an urban or suburban area.

F. Groundwater Evaluation - A groundwater evaluation will be prepared that discusses the potential for groundwater to harm human health or the environment. The evaluation will include the following:

1. A potentiometric map including:
 - facility boundary;
 - the permitted boundary as defined in the original permit issued by VDH, VDWM or the DEQ;
 - the waste unit boundary or boundaries;
 - groundwater monitoring well locations labeled with ID #;
 - groundwater elevations (most recently available data)'
 - potentiometric surface contours;
 - the direction of groundwater flow;
 - topographic contours reflecting current site conditions (no more than 5' elevation);
 - a bar scale;
 - north arrow
 - permanent structures and access roads; and
 - surface water features.
2. Identification of the aquifer including the nature of the uppermost aquifer (i.e. overburden, sparolite, bedrock) and the nature of the groundwater table (i.e. confined, semi-confined, unconfined).
3. A discussion of any on/off-site activities influencing the groundwater flow at the site.

4. A description of the existing groundwater monitoring network, identifying the upgradient and downgradient monitoring wells.
5. A discussion of the history of monitoring of the site, the beginning and the end of the different phases of monitoring performed and when, if any, corrective action program was implemented at the site. Include a discussion of the constituents detected at the site. Provide all monitoring data during the post-closure care period.
6. A summary of the groundwater monitoring requirements contained in the facility permit, applicable regulations, post-closure care plan, or any Order or compliance agreement entered into with the DEQ and a status report on how these requirements were met.
7. Any variances granted from groundwater monitoring requirements.
8. A discussion and data summary of the statistical trends seen in groundwater contaminant levels over the life of the monitoring program.
9. A discussion of any discharges to surface water over the life of the facility including those resulting from leachate outbreaks or groundwater discharge.
10. A discussion of any historical impacts to human health or the environment attributed to groundwater contamination.
11. A discussion of the status of the corrective action program if applicable.
12. A discussion of any potential for harm to human health or the environment if groundwater monitoring were discontinued. The analysis should include, but is not limited to the following:
 - Statistical Analysis - A statistical analysis of the all groundwater data during the post closure care period or other period as specified here must be provided. A trend analysis should also be prepared for each constituent recognized historically above background. The data from the last five years or a sufficient period of monitoring (based on flow rate and direction) should indicate no increasing trends in constituent levels.
 - Risk Assessment - A risk assessment performed based on the constituents that are being detected in the groundwater.
 - Parent/Daughter Constituent Discussion - A discussion of the constituents detected in the groundwater and any detected parent or daughter products and their levels. Any potential regulated daughter products that could potentially be derived from the detected constituents.
 - Facility's Potential Impact on Human Health and the Environment - Provide a discussion describing the landfills potential impact on human health and the environment based on the analysis performed in the event post-closure activities are discontinued.
 - Identify any public or private drinking water wells on all adjacent properties that may be impacted or are in the pathway of any projected contaminant plume.

G. Surface Water Evaluation - A surface water evaluation shall be prepared that assess the impact if any of the closed disposal unit on surrounding/adjacent surface waters. This evaluation will include the following

1. A site map containing the following items:
 - facility boundary;
 - the permitted boundary;
 - the waste unit boundaries;
 - surrounding surface water bodies within ### feet of all waste boundaries
 - potentiometric contours;
 - topographic contours reflecting current site conditions,
 - bar scale; and
 - north arrow.

2. A description of all surrounding/adjacent surface waters including assessment of quality and flow characteristics.
3. A discussion of any discharges to surface water over the life of the facility including those resulting from leachate outbreaks or groundwater discharge and remediation activities performed in response to those discharges.
4. A summary of the surface water monitoring requirements contained in the facility permit, applicable regulations, post-closure care plan, or any Order or compliance agreement entered into with the DEQ and a status report on how these requirements were met.
5. A discussion and data summary of the statistical trends seen in surface water contaminant levels over the life of the monitoring program.
6. A discussion of the status of the corrective action program if applicable.
7. A discussion of any potential for harm to human health or the environment if surface monitoring were discontinued. The analysis should include, but is not limited to the following:
 - Risk Assessment - A risk assessment performed based on the constituents that are being detected in the surface water.
 - Parent/Daughter Constituent Discussion - A discussion of the constituents detected in the surface water and any detected parent or daughter products and their levels. Any potential regulated daughter products that could potentially be derived from the detected constituents.
 - Facility's Potential Impact on Human Health and the Environment - Provide a discussion describing the landfills potential impact on human health and the environment based on the analysis performed in the event post-closure activities are discontinued.

H. Gas Management Evaluation - A gas management evaluation will be prepared that discusses the potential for gas to harm human health or the environment. The evaluation will include the following:

1. A site map containing the following items:
 - facility boundary;
 - the permitted boundary;
 - the waste unit boundary or boundaries;
 - gas monitoring well locations labeled with ID #;
 - gas vent or other gas management system location;
 - location of any geologic or hydraulic barriers to gas migration;
 - location of structures within 1000 feet of all waste boundaries;
 - topographic contours reflecting current site conditions;
 - a bar scale;
 - north arrow; and
 - permanent structures.
2. A discussion of the history of gas monitoring of the site which shall include: description of the gas monitoring network; the dates and duration of any gas detected above the lower explosive limit (LEL) at the facility property line or over 25% of the LEL in any facility structure; and a discussion of the constituents detected at the site. Include a discussion of any remediation steps taken resulting from the detection of gas above the thresholds described above.
3. A discussion of the trends seen in methane levels over time. Provide sufficient information to demonstrate methane levels have stabilized after declining over time. Provide modeling or gas generation data as needed to demonstrate that the facility is well past the peak landfill gas generation rate on the theoretical gas generation curve.

4. A discussion of the gas monitoring requirements contained in the facility permit, applicable regulations, gas remediation plan, post-closure care plan, or any order or agreement entered into with the Department and a status report on how these requirements were met.
 - A discussion of any potential for harm to the landfill cap if gas management is discontinued.
 - Identify any structures within 1000 feet of any waste disposal areas.
 - Identify any planned end use of the site.
 - Facility's Potential Impact on Human Health and the Environment - Provide a discussion describing the landfills potential impact on human health and the environment based on the analysis performed in the event post-closure activities are discontinued.
5. CDD and Industrial landfills will demonstrate that landfill gas is not exceeding regulatory standards by performing a minimum of 4 quarterly gas monitoring events using monitoring probes at the facility boundary before being released from post-closure care. Monitoring probes should be installed at the property boundary sufficient to demonstrate gas migration is not occurring unless the owner or operator has demonstrated to the satisfaction of the DEQ that gas migration could not occur along a specific pathway owing to geologic or hydraulic barriers. If gas is detected, a decomposition gas venting system and monitoring program shall be required in accordance with §9 VAC 20-80-280.

I. Leachate Management - An evaluation of the potential for leachate generation/ and the performance of the leachate management system will be prepared that discusses the potential for harm to human health or the environment if operation and maintenance of the leachate management system were discontinued. This should include:

1. A discussion of the historical and current leachate generation rate at the site.
2. A discussion of the system used to manage the leachate and the performance of that system. Discuss the disposition of the leachate that is currently being generated when the system is turned off.
3. A discussion of the leachate management or monitoring requirements contained in the facility permit, applicable regulations, post-closure care plan, or any order or agreement entered into with the DEQ and a status report on how these requirements were met.
4. A discussion of the constituents present in the leachate and the potential for those constituents to harm human health or the environment. If constituents are present, discuss the trends in constituent levels over time. Provide the analytical results of leachate analysis.
5. A discussion of any leachate management system failures or releases and the facility's response to address the issue.
6. A discussion of the potential for harm to human health or the environment if leachate management activities were discontinued. The leachate should be tested for any waste constituents that have been detected in the groundwater. The analysis should include, but is not limited to the following:
 - Risk Assessment - A risk assessment performed based on the constituents that have been detected in the groundwater during the active life and during the post-closure care period at the facility.
 - Parent/Daughter Constituent Discussion - A discussion of the constituents detected in the groundwater and any detected parent or daughter products and their levels. Include any potential daughter products that could potentially be derived from the detected constituents.
 - Evaluation of the hydraulic head placed on the liner should leachate management be discontinued.

- Facility's Potential Impact on Human Health and the Environment - Provide a discussion describing the landfills potential impact on human health and the environment if PCC activities were to end, based on the analysis performed.

7. Facilities that do not have a leachate collection system should indicate that no system is in place.
8. Facilities that are collecting groundwater/leachate in a toe drain may provide a similar discussion to address the discharge of waste and waste constituents.

J. Stormwater Management – An evaluation of the existing stormwater management controls at the facility and their potential to harm human health and the environment or other landfill management systems should maintenance of these controls be discontinued.

K. Final Cover System (FCS) Activities - A FCS integrity evaluation will be prepared that discusses the potential for failure of the cap resulting in harm to human health or the environment. Please include:

1. A discussion of historical FCS maintenance performed during the closure period, the dates and types of any major repairs and a summary of the current condition in terms of erosion potential and the establishment of vegetation. Examples of major repairs include slope failure, repairs of erosion that exposed waste or had the potential to compromise the cap system.
2. A discussion of the FCS maintenance requirements contained in the facility permit, applicable regulations, post-closure care plan, or any order or agreement entered into with the DEQ and a status report on how these requirements were met.
3. A discussion of the potential for harm to human health or the environment if cap maintenance activities were discontinued.

L. Maintenance of monitoring systems and other appurtenances - On a site-specific basis, provide a discussion of each system (waste piles, equipment, site security, etc.) and describe its potential for harming human health or the environment if operation and maintenance of the system is discontinued. Please include a discussion of maintenance or monitoring requirements of these appurtenances contained in the facility permit, applicable regulations, PCC plan, or any order or agreement entered into with the DEQ and a status report on how these requirements were met.

M. Other applicable information - A discussion of any other pertinent steps to be implemented to reduce the potential of the facility to harm human health and the environment should be discussed. For example, if the owner or operator will abandon wells in accordance with procedures outlined in the permit, these activities should be discussed.

N. Figures and Documentation

1. Provide an as built final contour map of the facility.
2. Provide copies of all post-closure inspection reports or inspection logs used to record inspections performed by the owner or operator where they are available.
3. Provide the P.E. certification. The certification must state that the PCC monitoring and maintenance period has been completed in accordance with the PCC plan. See Figure 1 – Recommended Language for P.E. Certification

O. Financial Assurance – If the facility is requesting partial release from PCC a revised annual PCC cost estimate shall be provided for the remaining PCC activities to be continued.

IV. EVALUATION FORMAT – The evaluation submitted to the DEQ shall follow the general format outlined in Section III. The DEQ recognizes there may be some instances where a facility's technical data may require additional sections to be added to those listed in these submission instructions as a means of more fully characterizing the technical data available and conclusions derived thereof. These instructions set no limit on the number or topical content of such additional sections as long as the information directly pertains to that required of the evaluation as outlined in these instructions. The suggested format of the report is provided in Table 1.

TABLE 1 – Table of Contents

Section	Subsection	Topic
1.0	Evaluation Summary	
2.0	Introduction	
	2.1	Purpose
	2.2	Limitations
	2.3	Definitions
3.0	Facility History and Site Description	
	3.1	Disposal History
	3.2	Closure Summary
	3.3	Site activities
	3.4	Other permits issues to the facility
4.0	Groundwater evaluation	
	4.1	Potentiometric map
	4.2	Aquifer recognition
	4.3	Groundwater flow rate and off-site influences to groundwater flow
	4.4	Groundwater monitoring well network
	4.5	Groundwater monitoring history
	4.6	Groundwater monitoring requirements
	4.7	Variances or other DEQ approvals
	4.8	Groundwater contamination statistical trends
	4.9	Discharges to surface water (include VPDES)
	4.10	Historical impacts by the facility to groundwater (summary table)
	4.11	Corrective Action (if applicable)
	4.12	Groundwater evaluation
	4.12.a	Groundwater statistical evaluation (if not discussed separately in Section 8.0)
5.0	Surface Water	
	5.1	Surface water site map
	5.2	Surface water identification
	5.3	Surface water impacts
	5.4	Surface water monitoring summary
	5.5	Surface water monitoring data and analysis
	5.6	Corrective Action (if applicable)
	5.7	Surface water evaluation
6.0	Gas Management Evaluation	
	6.1	Site map
	6.2	Gas Monitoring History
	6.3	Trends in methane levels

	6.4	Gas monitoring requirements
	6.5	Impact discontinuation of gas monitoring
7.0	Leachate Management	
	7.1	Current and historical Leachate generation rates
	7.2	Leachate management system
	7.3	Leachate Management requirements
	7.4	Constituents present in leachate
	7.5	Leachate discharges
	7.6	Impact on discontinuation of leachate management
8.0	Stormwater Management	
9.0	FCS Maintenance Activities	
	9.1	FCS Maintenance requirements
	9.2	Historical FCS Maintenance
	9.3	Impact on discontinuation of FCS maintenance
10.0	Maintenance of monitoring systems and other appurtenances	
11.0	Other applicable information	
12.0	Financial Assurance	
	12.1	Updated PCC cost estimate
13.0	PCC Certification	
	APPENDICES	
	Site Map	
	Supporting Documentation	

FIGURE 1 - Recommended Language for P.E. Certification

Certification PCC has been completed:

I certify that post-closure monitoring and maintenance has been completed in accordance with the post-closure plan dated [date on the post-closure plan] for permit number [permit number] issued to [name of permittee], with the exception of the deficiencies noted below. In addition, the facility has been evaluated in terms of its potential for harm to human health and the environment in the event that post-closure activities are terminated. This certification is based, in part, on my review of the [list applicable records], [for example: groundwater, gas, leachate monitoring, maintenance, and inspection records] for this facility. This certification is also based, in part, on my inspection of this facility conducted on [date of inspection]. My inspection of this facility included examination and review of the [list applicable inspections], [for example: vegetative cover, final cover, surface water management systems, leachate management systems, gas monitoring systems, and groundwater monitoring systems.]

Attached to this certification is my evaluation of the impact discontinuing post-closure monitoring and maintenance at [facility name], operated under permit [permit number], will have on human health and the environment.
The following discrepancies were noted when reviewing the post-closure care period:

Certification for reduced PCC monitoring or activities:

I certify that post-closure monitoring and maintenance for [list specific monitoring or maintenance requirement to be discontinued] has been completed in accordance with the approved post closure plan dated [date on approved plan] for permit number [permit number] issued to [name of permittee] with the exception of the deficiencies noted below. In addition, the facility has been evaluated in terms of its potential for harm to human health and the environment in the event that post-closure activities are terminated. This certification is based, in part, on my review of the [list applicable records], [for example: vegetative cover, final cover, surface water management systems, leachate management systems, gas monitoring systems, and groundwater monitoring systems] records for this facility. This certification is also based, in part, on my inspection of this facility conducted on [date of inspection]. My inspection of this facility included [list applicable inspections], [for example: vegetative cover, final cover, surface water management systems, leachate management systems, gas monitoring systems, and groundwater monitoring systems.]

Attached to this certification is my evaluation of the impact discontinuing [list monitoring or maintenance to be discontinued] at [facility name], operated under permit [permit number], will have on human health and the environment.
The following discrepancies were noted when reviewing the post-closure care period:

Signature of Professional Engineer
Date and Stamp